ABSTRACT

THE INFLUENCE OF ADDING Tween® 80 AS SURFACTANT IN DISSOLUTION MEDIA ON THE SOLUBILITY AND DISSOLUTION OF HPT – HPMC K100M NANOCRYSTALS

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Hesperetin (HPT) is an aglycon of flavanone glycoside hesperidin that has various biological effects such as neuroprotectant and anticancer. Nevertheless, this substance has a very low solubility (15,72 μg / mL) and fast elimination rate from the body. In this study, HPT was nanonized with the HPMC K100M as stabilizer agent to form nanosuspensions which was then freeze dried to obtain nanocrystals. Additionally, the use of HPMC K100M was expected to prolong the release of HPT since this polymer has sustained release effect. However, up to this date, no compendial method is available for the dissolution method of HPT, particularly as nanocrystals. This study is aimed to develop and to investigate dissolution of HPT-HPMC K100M nanocrystals. Two types of dissolution media were applied: simulated gastric fluid without enzyme (HCl 0.1N pH 1.2) and simulated intestinal fluid without enzyme (PBS buffer pH 6.8). Tween®80 was added as surfactant to obtain sink condition for dissolution test. Prior to the dissolution test, saturated solubility study was conducted to determine sink condition of physical mixture as well as nanocrystals of HPT-HPMC K100M for the dissolution study. Results showed that solubility of both physical mixture and nanocrystals of HPT-HPMC K100M were higher in SGF-tween®80 than in SIF-tween®80. Interestingly, dissolution of HPT in either physical mixture or nanocrystals were lower and underwent delay in SGF-tween®80 whilst the dissolution of HPT showed to have immediate release effect in SIF-tween®80. Furthermore, nanocrystals of HPT-HPMC K100M showed higher dissolution rate than its physical mixture.

Keywords : HPT, HPMC K100M, Tween® 80, Nanocrystals, Dissolution